

Appl. No. 10/814,408
Atty. Docket: 2002B139/2
Amendment dated May 21, 2007
Reply to Office Action dated March 21, 2007

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AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1-23. (Canceled)

24. (Previously Presented) An oxygenates to olefins fluidized bed reactor apparatus for converting an oxygenate feed to olefins in a riser reactor which comprises:

(a) an oxygenate feed line communicating with a riser reactor feed inlet to said riser reactor, said riser reactor further comprising a riser reactor outlet for riser reactor effluent containing solid catalyst particles and olefins-containing vapor;

(b) a preheater through which said oxygenate feed line passes for at least partially vaporizing said feed by heat exchange with a fluid heating medium flowing through said preheater;

(c) a disengaging vessel for receiving said riser reactor effluent and separating at least some of said solid catalyst particles from said effluent, said disengaging vessel further comprising a disengaging vessel outlet at an upper portion of said vessel for removing said olefins-containing vapor;

(d) a catalyst circulation line running downward from a lower portion of said disengaging vessel to a lower portion of said riser reactor;

(e) a regenerator comprising a lower inlet for introducing a regeneration medium, an upper outlet for regenerator flue gas, said regenerator further comprising a first catalyst transport line running downwardly from a lower portion of said disengaging vessel to a regenerator catalyst inlet on the regenerator, and a second catalyst transport line extending downwardly from a regenerated catalyst outlet on the regenerator and intersecting with a lift gas riser, said lift gas riser having an upper outlet at said disengaging vessel and a lower lift gas inlet; and

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(f) a regenerator catalyst circulation control valve means for controlling the passage of catalyst from said regenerated catalyst outlet to said lift gas riser, and being manipulated as a function of riser reactor temperature; and

(g) a catalyst circulation control valve means for controlling circulation of catalyst from said disengaging vessel to said riser reactor, and being manipulated as a function of the difference in pressure between an upper portion of said riser reactor and a lower portion of said riser reactor.

25-29. (Canceled)

30. (Previously Presented) The apparatus of claim 24, wherein said riser reactor comprises a temperature sensor at a point ranging from 30% to 40% of said riser reactor length, measured from said feed inlet of the riser reactor.

31. (Previously Presented) The apparatus of claim 24, wherein said riser reactor comprises a temperature sensor at a single location between about 20% to about 80% of the axial length of the reactor.

32. (Previously Presented) The apparatus of claim 24, wherein said riser reactor comprises a temperature sensor along a portion of the reactor.

33. (Previously Presented) The apparatus of claim 24, wherein said catalyst circulation control valve means for controlling circulation of catalyst includes a pressure controller that integrates readings taken from an upper riser reactor pressure sensor and a lower riser reactor pressure sensor and controls catalyst amount in the riser reactor.